

Tuberose Cultivation

(* Kan Singh)

Research Scholar, Department of Horticulture (Floriculture, Landscape and Architecture), College of Agriculture Horticulture, Mandsaur-458001, Madhya Pradesh

*Corresponding Author's email: kansinghdedusar@gmail.com

Tuberose (*Polianthes tuberosa*) is a popular ornamental plant known for its fragrant flowers, which are often used in perfumes and for decorative purposes. Cultivating tuberose requires specific conditions and care to ensure healthy growth and abundant flowering. Tuberose can be grown effectively in pots, borders, and beds, and it is commercially farmed for a variety of purposes. It is a hardy perennial crop with a shallow and adventitious root system. Tuberose stems are transformed into bulbs and bulblets that are used for propagation. The bulbs are covered with scales and leaf base. The stem is covered with leafy sheaths, in which leaves are narrow and long having sheath leaves. The colour of the leaves is light green. The inflorescence of tuberose is called spike. This will have 25±10 pairs of florets that open from bottom to top, *i.e.*, acropetal. Flowers have an inverted cone form and are quite fragrant. The flowers are white and have a waxy look. They have six stamens that are around 25 mm long and the ovary has three locules that hold several ovules. Tuberose fruit is known as capsule.



The total area under tuberose cultivation in the country is about 22 thousand hectares, with an estimated yield of 216.97 thousand metric tonnes of loose and cut flowers. In Madhya Pradesh total tuberose flower crop area in 2020-21 is 0.19 thousand hectares, with 2.76 thousand metric tonnes of loose and cut flowers produced.

Overview of the key aspects of tuberose cultivation:

- **Varieties** Tuberose varieties can be broadly categorized into single and double types based on the number of petals. Single-flowered varieties like 'Single Mexican' and double-flowered varieties like 'Double Pearl' are commonly grown.
- **Climate and Soil Requirements, Climate:** Tuberose thrives in warm, tropical, and subtropical climates. It prefers temperatures between 20-30°C (68-86°F) and requires full sunlight. **Soil:** Well-drained, sandy loam soil with a pH of 6.5-7.5 is ideal for tuberose cultivation. The soil should be rich in organic matter to support healthy growth.
- **Propagation** Tuberose is typically propagated through bulbs or bulb segments. Bulbs are planted at a depth of 5-7 cm, with a spacing of 15-20 cm between plants. Planting is usually done in the spring or early summer.
- **Planting and Care, Planting:** Bulbs should be planted in well-prepared beds with proper spacing to ensure good air circulation and light penetration. **Watering:** Tuberose requires consistent moisture but should not be waterlogged. Irrigation is crucial, especially during dry spells. **Fertilization:** A balanced fertilizer should be applied to support growth and

flowering. Organic manures and compost can also be added to enhance soil fertility. **Weed Control:** Regular weeding is necessary to prevent competition for nutrients and light.

- **Flowering and Harvesting, Flowering:** Tuberose plants typically bloom about 3-4 months after planting. The flowers are harvested when the bottom florets on the spike are fully open. **Post-Harvest:** The harvested spikes should be handled carefully to avoid damage. They are often used fresh or processed for essential oil extraction.
- **Pest and Disease Management:** Common pests include aphids, thrips, and nematodes, while diseases like leaf spot and root rot can affect tuberose plants. Integrated pest management practices, including the use of resistant varieties and proper cultural practices, are recommended.
- **Economic Importance and Uses:** Tuberose is valued for its aromatic flowers, which are used in perfumery, cosmetics, and aromatherapy. The essential oil extracted from tuberose flowers is highly prized. Additionally, the flowers are used in floral arrangements and for decorative purposes.
- **Challenges and Considerations, Climate Sensitivity:** Tuberose is sensitive to frost and extreme temperatures, which can affect flowering and bulb development. **Market Demand:** Understanding market demand and the proper timing for planting and harvesting are crucial for maximizing profits. **Quality Control:** Ensuring high-quality flowers and essential oils requires careful cultivation and post-harvest handling.

Tuberose cultivation can be a profitable venture with proper knowledge and care. Whether for commercial production or home gardening, tuberose offers beautiful and fragrant blooms that are highly valued in various industries.

Economics on Tuberose

The economics of tuberose (*Polianthes tuberosa*) cultivation in India is influenced by various factors, including market demand, cultivation practices, and the costs involved in production. Tuberose is valued for its aromatic flowers, which are widely used in the perfume industry, for making garlands, and in floral decorations. The total area under tuberose cultivation in the country is about 22 thousand hectares, with an estimated yield of 216.97 thousand metric tonnes of loose and cut flowers. In Madhya Pradesh total tuberose flower crop area in 2020-21 is 0.19 thousand hectares, with 2.76 thousand metric tonnes of loose and cut flowers produced. Here's an overview of the economic aspects of tuberose cultivation in India:

- **Market Demand and Supply,** Tuberose has a consistent demand in India and internationally due to its fragrant flowers. The flowers are used in:
 - Perfume and Essential Oil Industry:** Tuberose essential oil is a highly valued component in the perfume industry.
 - Floral Decorations:** The flowers are popular for making garlands, bouquets, and for use in religious and cultural ceremonies.
 - Export Market:** There is a significant export market for fresh flowers and tuberose oil, especially to countries in the Middle East and Europe.
- **Production Regions,** Tuberose is cultivated in several Indian states, including Karnataka, Tamil Nadu, Maharashtra, West Bengal, and Andhra Pradesh. These regions offer favorable climatic conditions for tuberose cultivation, including warm temperatures and adequate sunlight.
- **Cost of Cultivation Initial Setup:** This includes land preparation, purchase of bulbs, and setting up irrigation systems. **Recurring Costs:** These include labor, fertilizers, pesticides, irrigation, and other maintenance activities. **Harvesting and Post-Harvest Costs:** Costs associated with harvesting, transportation, and post-harvest processing, especially if the flowers are used for essential oil extraction.

- **Yield and Income, Yield:** The yield of tuberose flowers varies depending on the variety, cultivation practices, and environmental conditions. On average, a hectare of tuberose can produce around 10,000 to 15,000 flower spikes annually.
Income: The income from tuberose cultivation depends on the market price of the flowers and oil. Prices can fluctuate based on demand, quality, and supply. Essential oil from tuberose fetches a high price due to its unique fragrance and the labor-intensive extraction process.
- **Value Addition,** Value addition, such as processing tuberose flowers into essential oils, can significantly increase profitability. The oil extraction process involves distillation, which can be capital-intensive but yields a high-value product. Additionally, dried tuberose flowers and bulbs can be marketed for various uses, including herbal and ornamental purposes.
- **Challenges, Pest and Disease Management:** Tuberose is susceptible to various pests and diseases, which can affect yield and quality. **Climate Sensitivity:** Tuberose requires specific climatic conditions for optimal growth, making it vulnerable to climate variations. **Market Fluctuations:** The market for tuberose flowers and products can be volatile, impacting the profitability of growers.
- **Government Support and Schemes:** The Indian government and various agricultural bodies provide support to floriculturists, including tuberose growers, through schemes that offer subsidies on inputs, training programs, and assistance with marketing. These initiatives aim to enhance productivity, improve quality, and increase the income of flower growers.
- **Future Prospects** The demand for natural and aromatic products is rising, which bodes well for the future of tuberose cultivation in India. With the right investment in quality planting materials, modern cultivation practices, and value addition, tuberose farming can be a lucrative enterprise. In summary, tuberose cultivation offers significant economic potential in India, with opportunities in both domestic and international markets. However, it requires careful management of cultivation practices, pest and disease control, and market dynamics to maximize profitability.